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MANEUVERING GROUNDS IN TENNESSEE.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

TRANSMITTING,

IN COMPLIANCE WITH JOINT RESOLUTION OF CONGRESS OF FEBRUARY 24, 1911, THE REPORT OF THE COMMISSION TO INVESTIGATE AND REPORT ON THE ADVISABILITY OF ESTABLISHING CERTAIN PERMANENT MANEUVERING GROUNDS, ETC., FOR TROOPS OF THE UNITED STATES.

JUNE 30, 1911.—Read, referred to the Committee on Military Affairs, and ordered to be printed with accompanying illustrations.

*To the Senate and House of Representatives:*

I transmit herewith the report of the commission appointed to investigate and report on the advisability of the establishment of permanent maneuvering grounds, camp of inspection, rifle and artillery ranges for troops of the United States at or near the Chickamauga and Chattanooga Military Park, and as to certain lands in the State of Tennessee proposed to be donated to the United States for said purposes, in compliance with the joint resolution of Congress approved February 24, 1911.

Wm. H. TAFT.

THE WHITE HOUSE, June 30, 1911.

WAR DEPARTMENT,  
Washington, June 24, 1911.

DEAR MR. PRESIDENT: I have the honor to inclose herewith, for transmission to Congress, in compliance with a joint resolution of Congress approved February 24, 1911, the reports of the commission appointed to investigate and report on the advisability of the establishment of permanent maneuvering grounds, camp of inspection, rifle and artillery range for troops of the United States at or near the Chickamauga and Chattanooga Military Park, and to likewise report as to certain lands in the State of Tennessee proposed to be donated to the United States for said purposes.

11-35763

U.S. GOVERNMENT PRINTING OFFICE 1911 12500

The reports contain full information as to the location, approximate area, probable cost, advantages and disadvantages of the tract of land in the vicinity of the Chickamauga and Chattanooga National Military Park; and the location, approximate area, desirability and suitability of a tract in the vicinity of Tullahoma, Tenn., which has been offered to the United States by the citizens of Tullahoma for the establishment thereon of a maneuver camp and target ranges.

To carry out the policy of bringing together into camps of instruction regular troops and Organized Militia, it is of the utmost importance to the Government to own suitable sites for such camps.

The commission reports that it is of opinion that the tract of land adjoining Chickamauga Park upon which it was directed to submit a report is not suitable for a maneuvering camp and rifle and artillery range. The commission, however, found a tract of land aggregating about 34,560 acres adjoining Chickamauga Park, which they regard as fairly suitable and which they estimate can be purchased for about \$1,000,000. The commission does not recommend the purchase of either tract near the Chickamauga Park.

With respect to the land to be donated to the United States, but one tract was offered for inspection, that being one of 5,000 acres at Tullahoma, Tenn., and this was inspected and reported upon by the commission.

The commission is of opinion that this tract is suitable for a camp site and for small-arms target practice, but that it is not sufficient in extent for maneuvering purposes or for artillery target practice. The adjoining country, however, is fairly well adapted for maneuvers and for artillery target practice, and additional land can be procured for about \$12.50 per acre. If 35,000 acres additional could be procured, the Tullahoma site would fulfill all the conditions necessary for a maneuver camp of all arms.

As land can be procured at Tullahoma for less than half the cost of the Chickamauga-Chattanooga site, the acquirement of the Tullahoma site is recommended.

Very respectfully,

H. L. STIMSON,  
*Secretary of War.*

The PRESIDENT,  
*The White House.*

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#### REPORT OF COMMISSION ON ADVISABILITY OF ESTABLISHING MANEUVERING GROUND AND CAMP NEAR CHICKAMAUGA PARK.

WASHINGTON, D. C., June 3, 1911.

THE ADJUTANT GENERAL OF THE ARMY,  
*Washington, D. C.*

SIR: 1. The commission appointed by Special Orders, No. 54, March 7, 1911, War Department, as amended by paragraph 17, Special Order No. 105, War Department, dated May 5, 1911, in compliance with public resolution No. 61, approved February 24, 1911, submits the following report upon the advisability of making, establishing, and maintaining a maneuvering ground and camp of inspection, rifle and artillery ranges for United States troops near Chickamauga and Chattanooga National Military Park.

# SKETCH MAP

OF A PORTION OF

## WALKER AND CATOOSA COUNTIES GEORGIA,

SHOWING THE CHICKAMAUGA NATIONAL PARK,

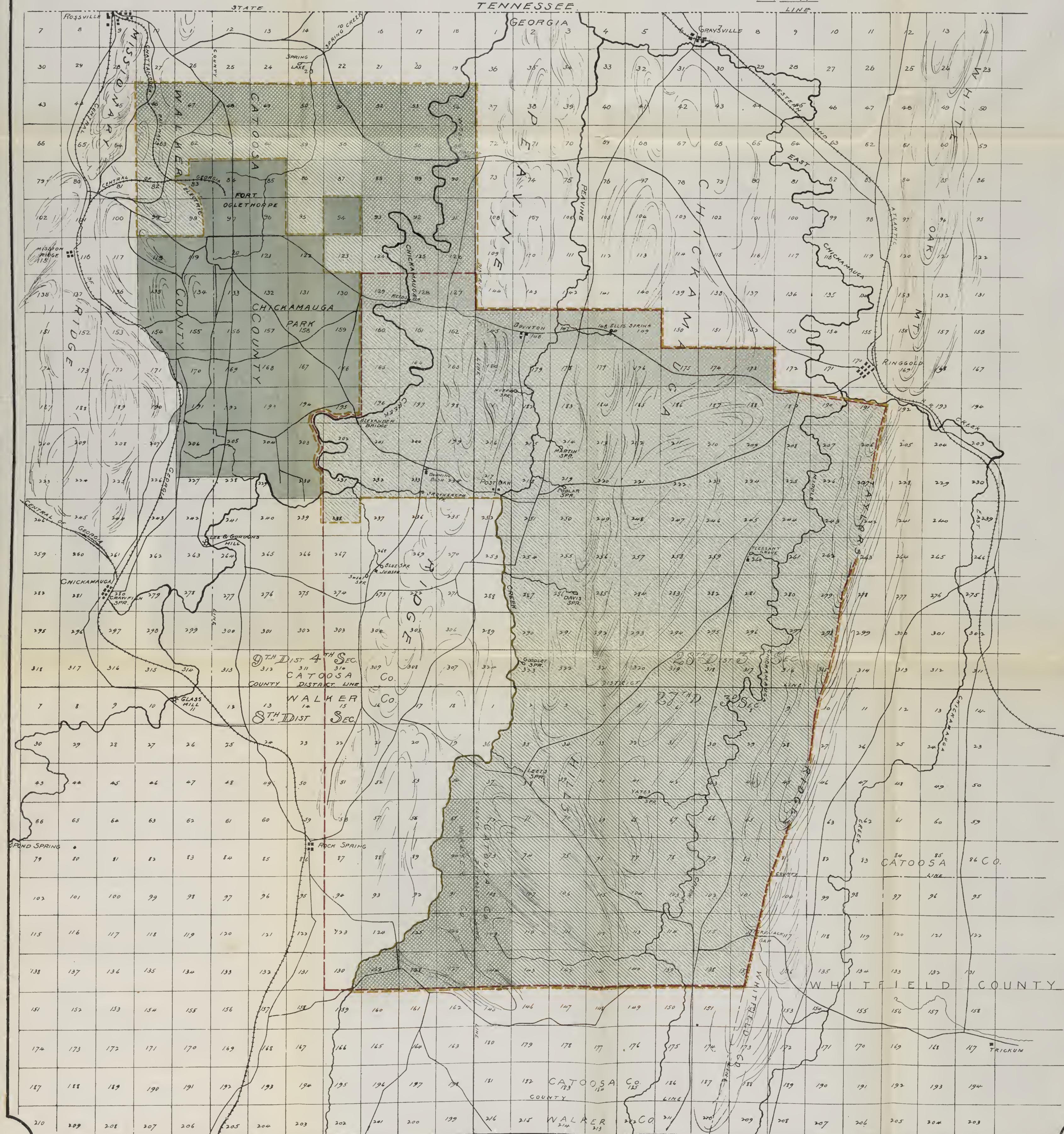
FORT OGLETHORPE AND THE LANDS

PROPOSED FOR A BRIGADE POST AND MANEUVER GROUNDS.

SCALE 0 1/4 1 2 MILES.

*Edward E. Bell*

ENGINEER, CHICKAMAUGA NAT. PARK  
JAN 7 1907.





2. The commission met at Chattanooga, Tenn., May 10, 1911. Present, all the members. The commission was met by a committee of the Chamber of Commerce of the city of Chattanooga, which furnished every facility for inspecting the grounds contiguous to the Chickamauga and Chattanooga Military Park. The commission inspected the proposed grounds on the 11th and 12th of May. The grounds inspected are shown on the inclosed map, marked "A."

3. The body of land previously reported upon by a board of Army officers is shown on the map by parallel and cross-hatched lines and joins the Chickamauga and Chattanooga Military Park on the east. It also extends 1 mile to the north of the present post of Fort Oglethorpe. Its boundary is shown by a yellow line. That part of the proposed grounds lying north of the road leading from Chickamauga Park to Ringgold via Ellis Spring was proposed more particularly for a brigade post than for a maneuvering site and rifle and artillery range. The commission is of opinion that this part of the grounds is not suitable for maneuvers on account of the doubtful condition of its water supply.

4. The part of the proposed tract south of the Chickamauga Park-Ellis Spring-Ringgold Road lies between the crest of Taylors Ridge on the east and Peavine Creek on the west. It is about  $8\frac{1}{2}$  miles long north and south and  $4\frac{1}{2}$  miles wide east to west. It contains the western slope of Taylors Ridge, the valley of the Middle Chickamauga Creek, Chickamauga Hills, and the valley to their west as far as Peavine Creek. Taylors Ridge can not be crossed by troops at points within the proposed tract except at Nickajack Gap, near the extreme southeast corner of the tract. Chickamauga Hills are broken, rugged, and wooded. The underbrush is thick. The only north and south road entirely within the tract is the road along Middle Chickamauga Creek. For troops to move along Peavine Valley would require the construction of roads or passing outside of the maneuvering grounds. The width of  $4\frac{1}{2}$  miles in a wooded hilly country would seriously limit artillery fire.

5. For the above reasons the commission is of the opinion that the tract of land as proposed is not suitable for a maneuvering camp and rifle and artillery ranges.

6. The commission is of opinion that if the boundary of the proposed tract be extended beyond Peavine Creek to a line indicated in red on map marked "A," and all that portion of the proposed tract more than one-half mile north of Chickamauga Park-Ellis Spring-Ringgold Road be excluded, the tract would be both suitable and desirable and would cost no more than the tract proposed. This would make an area about 9 miles north and south by 6 miles east and west, or about 34,560 acres.

7. The advantages of the tract are—

(a) Close proximity of the railroad at Ringgold at its northeast corner and at Rock Spring at its southwest corner. (b) It would be at a railroad center (Chattanooga) near the middle of the territory where the troops to be mobilized are located. (See table attached marked "B.") (c) It would be of sufficient extent for the use of all the troops in this section of the country. (d) It affords good camp sites. (e) The climate, water supply from numerous springs, and other conditions apt to affect the health of troops are excellent. (See

report on sanitary conditions marked "C.") (f) Fair interior communications that could be easily improved. (g) Good exterior communications. (h) Good sites for rifle and artillery ranges. (i) It is large enough and varied enough to afford facilities for working out the different military problems in maneuvers. (k) The Government already possesses many miles of excellent roads in and around Chickamauga Park as well as some 7,000 acres in the park itself which could be utilized in connection with this tract.

8. The disadvantages of the tract are—

(a) The country is somewhat more broken up and hilly, especially in the north central part, than is desirable for maneuver grounds. (b) It is largely covered with woods with thick underbrush, entailing additional cost for clearing. (c) The surface water, the streams, and that from shallow wells is liable to and indeed may be contaminated. This would limit the water supply to the many excellent springs.

9. The commission is of the opinion, based upon prices as given in options formerly taken and upon personal inquiries made by its members, that the cost of the land as proposed by it will be about \$1,000,000. The estimated price is believed to be considerably more than the actual value of the land for agricultural purposes, but it is not believed that it could be obtained for less either by private purchase or by condemnation. Attention is called to the fact that, though the initial cost of the proposed tract is large, a smaller area would not be sufficient, and therefore the purchase of a smaller tract would be inadvisable from an economic point of view, and is not recommended. Attention is further invited that the value of this land will probably increase, and if purchase is deferred the cost will be greater than the above estimate.

10. The commission is of the opinion that it is very desirable to procure suitable sites for maneuvers and for rifle and artillery ranges at some point centrally located with reference to the home stations of the militia of the States named in section 2 of the public resolution No. 61, approved February 24, 1911.

JOS. GARRARD,  
*Colonel, Fifteenth Cavalry, President.*

W. C. LANGFITT,  
*Lieutenant Colonel, Corps of Engineers, Member.*

B. F. CHEATHAM,  
*Major and Quartermaster, Member.*

FRANK. C. BAKER,  
*Medical Corps, Member.*

E. WITTENEYER,  
*Major, Twenty-seventh Infantry, Recorder.*

## APPENDIX B.

STATEMENT GIVING THE APPROXIMATE COST OF MOBILIZING THE MILITIA OF THE STATES OF KENTUCKY, TENNESSEE, MISSISSIPPI, ALABAMA, GEORGIA, FLORIDA, SOUTH CAROLINA, AND NORTH CAROLINA AT THE THREE DIFFERENT POINTS OF TULLAHOMA, CHATTANOOGA, AND ATLANTA, SHOWING THE IMPORTANCE OF THE SUBJECT OF TRANSPORTATION IN SELECTING MANEUVER SITES.

[This cost of transportation is in the nature of an annual charge and occurs whenever troops are mobilized and in proportion to the number so mobilized.]

The cost of transportation consists of two parts—the cost of the fare of the individuals and the cost of the freight on the animals, wagons, tentage, equipment, and supplies.

For a mobilization the cost of the second part is 36 per cent of the cost of the fare of the individuals.

To mobilize all of the militia in the several States named at Tullahoma would be the equivalent of moving one man 6,954,630 miles, and at 2 cents a mile the cost would be \$139,092.60. To return them to their home stations would cost the same, making a total of \$278,185.20. Add to this 36 per cent for freight, etc., would bring the total cost up to \$378,331.87.

To mobilize the same troops at Chattanooga and return them to their home stations the total cost would be \$319,308.42, a difference of \$59,023.45.

To mobilize them at Atlanta and return them to their home stations would cost \$274,394.14, a difference between Atlanta and Tullahoma of \$103,937.73, and between Atlanta and Chattanooga of \$44,914.28.

## TO CHATTANOOGA, TENN.

	Number of troops.	Distance.	Total miles.
Florida:			
Jacksonville.....	250	502	125,500
Live Oak.....	250	439	109,750
Apalachicola.....	250	547	136,750
Tampa.....	250	714	178,500
Key West.....	250	1,026	256,500
Gainesville.....	250	505	125,250
	1,500		
Kentucky:			
Whitesburg.....	250	264	66,000
Frankfort.....	250	285	71,250
Beattyville.....	250	328	82,000
Bowling Green.....	250	224	56,000
Madisonville.....	250	259	64,750
Henderson.....	250	297	74,250
Louisville.....	500	265	132,500
	2,000		
Mississippi:			
Laurel.....	250	351	87,750
Meridian.....	250	295	73,750
Macon.....	250	319	79,750
Brookhaven.....	250	445	111,250
Natchez.....	250	489	122,250
Yazoo City.....	250	436	109,000
Macon.....	60	319	19,140
Vicksburg.....	100	435	43,500
	1,600		
South Carolina:			
Greenville.....	250	299	74,750
Yorkville.....	250	385	96,250
Liberty Hill.....	250	447	111,750
Columbia.....	250	391	97,750
Orangeburg.....	250	392	98,000
Sumter.....	250	437	109,250
Charleston.....	250	447	111,750
Georgetown.....	250	512	128,000
Columbia.....	250	391	97,750
	2,250		
Tennessee:			
Clarksville.....	250	207	51,750
Memphis.....	250	310	77,500
Nashville.....	250	151	37,750
Chattanooga.....	250		
Knoxville.....	250	111	27,750
Bristol.....	250	242	60,500
Chattanooga.....	60		
	1,500		

## TO CHATTANOOGA, TENN.—Continued.

	Number of troops.	Distance.	Total miles.
Georgia:			
Atlanta.....	1,050	138	144,900
Savannah.....	900	432	388,800
Macon.....	800	241	192,800
Columbus.....	250	242	60,500
Atlanta.....	100	138	13,800
	3,100		
Alabama:			
Montgomery.....	1,150	239	274,850
Birmingham.....	100	143	14,300
Troy.....	800	290	232,000
Anniston.....	800	143	114,400
	2,850		
North Carolina:			
Shelby.....	800	336	268,800
Washington.....	800	618	494,400
Reidsville.....	800	454	363,200
	2,400		
Total.....	17,320		5,869,640

## TO ATLANTA, GA.

Florida:			
Jacksonville.....	250	351	87,750
Live Oak.....	250	301	75,250
Apalachicola.....	250	409	102,250
Tampa.....	250	563	140,750
Key West.....	250	875	218,750
Gainesville.....	250	367	91,750
	1,500		
Kentucky:			
Whitesburg.....	250	350	87,500
Frankfort.....	250	439	109,750
Beattyville.....	250	427	106,750
Bowling Green.....	250	362	90,500
Madisonville.....	250	397	99,250
Henderson.....	250	435	108,750
Louisville.....	500	468	234,000
	2,000		
Mississippi:			
Laurel.....	250	375	98,750
Meridian.....	250	319	79,750
Macon.....	250	343	85,750
Brookhaven.....	250	469	117,750
Natchez.....	250	513	128,250
Yazoo City.....	250	460	115,000
Macon.....	60	343	20,580
Vicksburg.....	100	459	45,900
	1,660		
South Carolina:			
Greenville.....	250	161	40,250
Yorkville.....	250	247	61,750
Liberty Hill.....	250	309	77,250
Columbia.....	250	253	63,250
Orangeburg.....	250	254	63,500
Sumter.....	250	299	74,750
Charleston.....	250	309	77,250
Georgetown.....	250	374	93,500
Columbia.....	250	253	63,250
	2,250		
Tennessee:			
Clarksville.....	250	345	86,250
Memphis.....	250	418	104,500
Nashville.....	250	289	72,250
Chattanooga.....	250	138	34,500
Knoxville.....	250	197	49,250
Bristol.....	250	328	82,000
Chattanooga.....	60	138	8,280
	1,560		
Georgia:			
Atlanta.....	1,150		
Savannah.....	900	294	264,600
Macon.....	800	89	71,200
Columbus.....	250	119	29,750
	3,100		
Alabama:			
Montgomery.....	1,150	175	201,250
Birmingham.....	100	167	16,700
Troy.....	800	203	162,400
Anniston.....	800	104	83,200
	2,850		

## MANEUVERING GROUNDS IN TENNESSEE.

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## TO ATLANTA, GA.—Continued.

	Number of troops.	Distance.	Total miles.
		Miles.	
North Carolina:			
Shelby.....	800	234	187,200
Washington.....	800	529	423,200
Reidsville.....	800	385	308,000
Total.....	2,400		5,044,010

## TO TULLAHOMA, TENN.

Florida:			
Jacksonville.....	250	584	146,000
Live Oak.....	250	521	130,250
Apalachicola.....	250	629	157,250
Tampa.....	250	796	199,000
Key West.....	250	1,108	277,000
Gainesville.....	250	587	146,750
Kentucky:			
Whitesburg.....	250	346	86,500
Frankfort.....	250	311	77,750
Beattyville.....	250	344	86,000
Bowling Green.....	250	142	35,500
Madisonville.....	250	177	44,250
Henderson.....	250	215	53,750
Louisville.....	500	183	91,500
Mississippi:			
Laurel.....	250	433	108,250
Meridian.....	250	377	94,250
Macon.....	250	401	100,250
Brookhaven.....	250	527	131,750
Natchez.....	250	571	142,750
Yazoo City.....	250	518	129,500
Macon.....	60	401	24,060
Vicksburg.....	100	517	51,700
South Carolina:			
Greenville.....	250	381	95,250
Yorkville.....	250	467	116,750
Liberty Hill.....	250	529	132,250
Columbia.....	250	473	118,250
Orangeburg.....	250	474	118,500
Sumter.....	250	519	129,750
Charleston.....	250	529	132,250
Georgetown.....	250	594	148,500
Columbia.....	250	473	118,250
Tennessee:			
Clarksville.....	250	125	31,250
Memphis.....	250	321	80,250
Nashville.....	250	69	17,250
Chattanooga.....	250	82	20,500
Knoxville.....	250	193	48,250
Bristol.....	250	324	81,000
Chattanooga.....	60	82	4,920
Georgia:			
Atlanta.....	1,150	220	253,000
Savannah.....	900	514	462,600
Macon.....	800	323	258,400
Columbus.....	250	324	81,000
Alabama:			
Montgomery.....	1,150	321	369,150
Birmingham.....	100	225	22,500
Troy.....	800	372	297,600
Anniston.....	800	225	180,000
North Carolina:			
Shelby.....	800	418	334,400
Washington.....	800	700	560,000
Reidsville.....	800	536	428,800
	2,400		
	17,320		6,954,630

[Distances given by Paymaster General computed over official route.]

## APPENDIX C.

## SANITARY CONDITIONS CHICKAMAUGA PARK, GA.

Vital statistics of this section are not obtainable. The population of Catoosa County, in which the greater part of the area under consideration lies, is 7,184, its area comprising about 109,000 acres, giving approximately 0.066 to each acre.

It is not considered worth while to discuss the features which affected the concentration camp in this section during 1898, but for the purpose of arriving at some conclusion in regard to sanitary conditions as they exist at present the reports from the maneuver camps at Chickamauga Park and at the post of Fort Oglethorpe during the years 1906, 1908, and 1910 are reviewed:

*Admission rates per 1,000, averaged for 12 months.*

## MANEUVER CAMPS.

	1910	1908	1906
Typhoid.....	35	15	54
Dysentery.....	20	.....	21
Diarrhea.....	195	240	141
Enteritis.....	105	30	72
Venereal.....	150	225	150
Malaria.....	35	65	147

## FORT OGLETHORPE.

	1910	1908	1906
Typhoid.....	5	2	20
Dysentery.....	4	3	6
Diarrhea.....	15	21	25
Enteritis.....	15	.....	4
Venereal.....	153	162	340
Malaria.....	9	36	70

N. B.—Averaging for 12 months gives nearly four times the rate given when averaging for the three-month period during which the maneuvers were conducted.

The rates for the whole Army for admission for typhoid, dysentery, diarrhea, enteritis, venereal diseases, and malaria are here inserted for purposes of comparison:

	1910	1908
Typhoid.....	3.03	3.87
Dysentery.....	1.93	7.34
Diarrhea and enteritis.....	49.62	53.27
Venereal.....	152.12	194.13
Malarial fevers.....	20.29	46.33

Comparison of the admission rates of the various maneuver camps in the United States during the season of 1910 show as follows:

*Admissions for all causes, per 1,000, averaged for 12 months.*

Chickamauga Park .....	1,245.00
Gettysburg.....	902.91
Atascadero.....	846.99
Pine Camp.....	525.28

Typhoid fever has been a common disorder in this vicinity during the past 10 years at least, and during the maneuver period of 1910 out of 12 cases occurring in maneuver camps 7 occurred at this point, although 5 of these were probably contracted elsewhere. It is impossible to determine the number of State troops which developed the disease after their return to their homes, and among the regular troops it was also impossible to determine the number which appeared after the maneuvers were completed.

Comparison of the admission rates at Fort Oglethorpe and at other posts in the United States is also of value and shows that in the year 1907 the admission rate and the rate of noneffectives was higher at this post than at any other of the conti-

mental stations occupied by our troops. In 1908 marked improvement was shown in conditions and in 1909 the noneffective rate was third from the lowest in the Army.

*Climate.*—The climate of this locality during the maneuver months of July, August, and September is very uniform. There is practically no rain and the temperature ranges from a maximum of 105 to a minimum of 70.

Mosquitoes are not numerous, and it is a comparatively simple matter to do away with most of the breeding places found on the area. Flies, however, are a source of great annoyance and, in time of epidemics, of danger, and apparently breed even in the absence of manure.

*Camp sites.*—Only one point on the proposed reservation was found which would be suitable for the encampment of more than an entire brigade recruited to war strength. There are numerous places where regiments or even brigades might camp, and these all within access of water for both troops and animals, with excellent drainage, and with streams near by suitable for the carrying off of the effluent of septic tanks, if such should be installed. The whole area is drained by three streams—West Chickamauga Creek, Pea Vine Creek, and Middle Chickamauga Creek—which flow through valleys of the same name, lying parallel to one another in a direction of about north 15° E.

*Water supply.*—The problem of water supply is one which requires very careful consideration. The geological strata of this locality, which are entirely sedimentary in character, were originally flat, but by compression three high ridges, Pea Vine, Middle Chattanooga Limestone, and Taylor, have been thrown up. The erosion of the soft Chattanooga limestone, which forms a layer approximately 1,110 feet in thickness over most of this section, has bared the harder Knoxville dolomite and Chanasauga shale, and has transformed the original hills into the valleys spoken of above. The strata are all full of fissures, especially the limestone, and numerous "sinks" where these have caved in appear in the area. These fissures form channels through which the deep layer of the surface water flows continuously, and are a source of danger to those using the water, as they give easy access of any surface pollution to the waters below. In fact, wells bored for the purpose of supplying the post of Fort Oglethorpe, even after reaching a depth of 2,000 feet and cased for over three-quarters of their extent, were shown to be contaminated. The irregularity of the rocky floor gives rise to great uncertainty as to the location of the underground supply. In places water may be obtained in ample quantity before the limestone has been passed, while other wells reaching a depth of 2,000 feet may be dry. In fact, there is no true water-bearing stratum in this region for the deep underground waters.

Water is obtained from the running streams, of which mention has been made; from shallow wells, dug from 15 to 30 feet in the limestone; from deep wells, bored or driven to a depth of from 1 to 2,400 feet; and from certain free-flowing springs, all of which have their source at outcroppings of the Chanasauga Shale, their supply being, in all probability, from underground streams lying on this stratum.

The streams are all subject to great variation in flow. Any one of the three main streams gives sufficient supply for a full division of troops, but they are all grossly polluted and their use would entail the establishment of settling and filtration tanks and the water would need careful sterilization before use.

The shallow wells become muddy in rainy weather; their supply is very small, and they are subject to pollution, all of those which have been examined having shown evidence of such.

The water from the deep-driven wells is of excellent chemical composition and is uniformly clear, but the liability of contamination makes the establishment of a sterilization plant a necessity if it is to be used, and, in fact, such a plant has been found necessary at Fort Oglethorpe.

The water from the large springs is by far the safest source of supply for large bodies of troops. The largest of these, with their estimated flow, are shown below. Both chemical and bacteriological examination shows them to be potable waters of a high grade, but the difficulty of placing their output into the different camps is a matter requiring consideration on account of the expense entailed.

Name of spring.	Output in gallons per minute.
Yates Spring.....	6,206
Crawfish Spring.....	7,000
Ellis Spring.....	370
Martin Spring.....	216
Leets Spring.....	201
Poplar Spring.....	93

FRANK BAKER,  
*Major, Medical Corps.*

REPORT OF THE COMMISSION RELATIVE TO LAND IN VICINITY OF  
TULLAHOMA, TENN.

WASHINGTON, D. C., June 2, 1911.

THE ADJUTANT GENERAL OF THE ARMY,

*War Department, Washington, D. C.*

SIR: 1. The commission appointed by Special Orders, No. 54, March 7, 1911, War Department, as amended by paragraph 17, Special Orders, No. 105, War Department, May 5, 1911, in compliance with public resolution No. 61, approved February 24, 1911, submits the following report upon the matters referred to in paragraph 11 of the resolution:

2. A tract of land of approximately 5,000 acres, in the vicinity of Tullahoma, Tenn., having been offered to the United States by the citizens of Tullahoma for the establishment thereon of a maneuver camp and target ranges, the commission proceeded to examine the same and its vicinity on May 13 and 14, 1911. This tract lies in the Tennessee Barrens, which form a part of the Highland Rim, and is shown in the blue print (Appendix E).

3. The commission arrived at the following conclusions relative to the desirability and suitability of the area examined for the purposes cited in the public resolution:

(a) The site is well adapted for the establishment of a maneuver camp and for purposes of drill and troop instruction. The area to be donated is too limited for the conduct of maneuvers and an area approximating 40,000 acres would be necessary for this purpose. It is worthy of note, however, that the territory in this neighborhood is very thinly settled and the ground of little value for agricultural purposes, thus permitting maneuvering over a large territory not owned by the Government with a minimum expenditure for damages attendant thereon.

(b) The ground is well suited and of ample size for the establishment of a small-arms rifle range sufficient to accommodate the national match. The character of the ground where it is proposed to place the range and profiles of the same appear in appendixes.

(c) The firing of field artillery on this area is possible, but satisfactory conditions for a range would not obtain unless sufficient land were secured to permit of the firing of field guns from any point on the reservation. This would entail the use of a tract of at least 25,000 acres. The area is heavily wooded and too flat to furnish ideal conditions for this purpose.

4. Appendix I, submitted by the Board of Trade of Tullahoma, contains a brief discussion of the conditions likely to affect the health of troops encamped there.

5. The area which appears to be best adapted to all requirements is shown in Appendix D as included within the limits outlined in red.

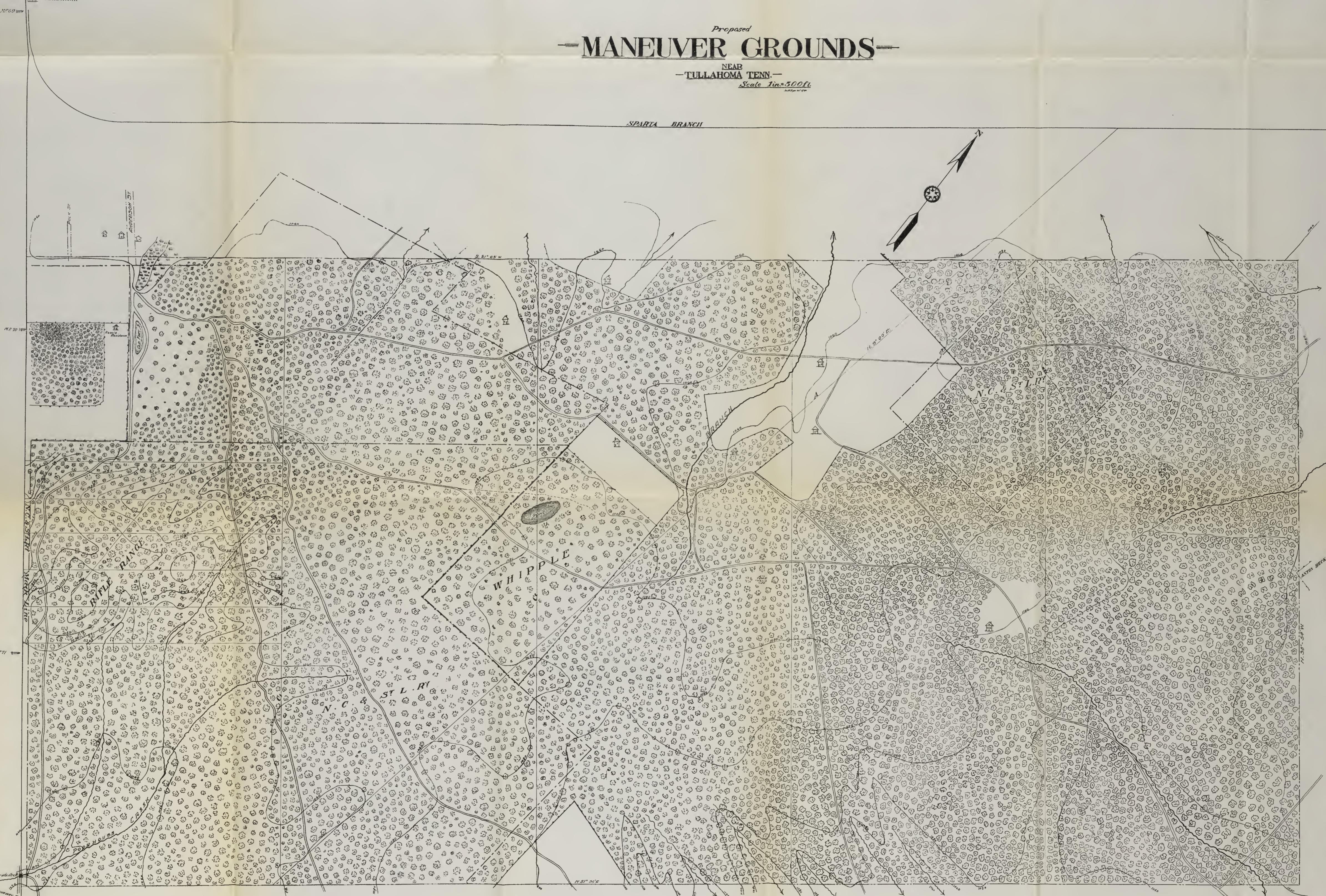
6. This area possesses the following advantages:

- (a) It is very thinly settled.
- (b) The land can be obtained at a very reasonable figure (about \$12.50 per acre), as shown by the option prices indicated on Appendix D, all of the higher-priced land having been excluded.
- (c) It is sufficient in extent for all purposes.
- (d) Suitable camp sites are available.
- (e) Water is available and suitable in quantity and quality at both the southeast and northwest corners, which points would be the






Tullahoma







1995-381, 2000-381; PZM 2000-381

probable location of the large camps, and good water can be obtained at moderate expense by boring through the impermeable slate to a depth of approximately 200 feet at any point over the area.

(f) Spurs from the railroads, both at Tullahoma and Manchester, are very easy of construction and can be carried directly into the main camps.

(g) The climate, water supply, and other conditions likely to affect the health of troops are excellent.

7. Its disadvantages are—

(a) Its location is not sufficiently central to the States mentioned in the public resolution. (See Appendix B to report respecting land near Chickamauga Park.)

(b) Railroad facilities are confined to a single-track railroad, the Nashville, Chattanooga & St. Louis Railroad, the main line of which is now being double tracked from Chattanooga to Stevenson, which is half way to Tullahoma.

(c) The country is too generally wooded and too flat for ideal maneuver conditions.

8. The commission is of the opinion that it is advisable to accept the proposed tract of 5,000 acres:

(a) For the purpose of establishing a small-arms rifle range of sufficient size to accommodate the national rifle competitions.

(b) For the purpose of establishing and maintaining camps of instruction.

(c) For the purpose of securing a site for a mobilization camp in the event of war.

(d) For the purpose of establishing maneuver camps in the event of maneuvers covering a large territory not owned by the Government.

Appended hereto are the following maps and papers:

(A) Par. 17, G. O. 105, W. D.

(C) Soil map of Coffee County, Tenn. (Omitted.)

(D) Detail map of entire area under discussion, showing outline of area proposed for maneuver grounds.

(E) Contour map of the 5,000-acre tract proposed for donation.

(F) Contour map of the proposed target range.

(G) Profiles of tracts to be donated. } The same. (Omitted.)

(H) Profiles of rifle range.

(I) Brief of reasons for proposing tract submitted by the Board of Trade, Tullahoma, Tenn.

(J) Discussion of sanitary conditions by Maj. Frank C. Baker, Medical Corps.

(K) Tables showing cost of transportation. (See Appendix B to report respecting land near Chickamauga Park.)

JOSEPH GARRARD,  
Colonel 15th Cavalry, President.

W. C. LANGFITT,  
Lieutenant Colonel, Corps of Engineers, Member.

B. F. CHEATHAM,  
Major and Quartermaster, Member.

FRANK C. BAKER,  
Medical Corps, Member.

E. WITTENEYER,  
Major, 27th Infantry, Recorder.

## APPENDIX A.—TULLAHOMA.

WAR DEPARTMENT,  
Washington, May 5, 1911.

## SPECIAL ORDERS, No. 105.

[Extracts.]

\* \* \* \* \*

17. By direction of the President, Colonel Joseph Garrard, 15th Cavalry; Major Frank C. Baker, Medical Corps; and Major Edmund Wittenmyer, 27th Infantry, are detailed as members of the commission appointed in Special Orders, No. 54, March 7, 1911, War Department, to investigate and report upon the question of establishing and maintaining a maneuvering ground and camp of inspection, rifle and artillery ranges near the Chickamauga and Chattanooga Military Park, and for other purposes, vice Colonel Eli D. Hoyle, Field Artillery; Major Edward N. Jones, jr., 17th Infantry; and Captain William K. Bartlett, Medical Corps, hereby relieved.

The members of the commission as now constituted, consisting of Colonel Joseph Garrard, 15th Cavalry; Lieutenant Colonel William C. Langfitt, Corps of Engineers; Major B. Frank Cheatham, quartermaster; Major Frank C. Baker, Medical Corps; and Major Edmund Wittenmyer, 27th Infantry, will meet at Chattanooga, Tennessee, on May 10, 1911, and carry out the provisions of the order cited.

\* \* \* \* \*

By order of the Secretary of War.

LEONARD WOOD,  
Major General, Chief of Staff.

Official:

HENRY P. McCAIN, *Adjutant General.*

## APPENDIX I.—TULLAHOMA.

Col. JOSEPH GARRARD, Lieut. Col. WILLIAM C. LANGFITT, Maj. B. FRANK CHEATHAM, Maj. EDMUND WITTENMYER, Maj. FRANK C. BAKER,  
*Members of Special Army Commission.*

GENTLEMEN: We desire to hand you herewith a brief presenting the reasons offered by the citizens of Coffee and Franklin Counties and of Tullahoma for the location of the Government maneuver grounds near Tullahoma.

You will also find submitted a map of 5,000 acres that is offered, showing topography, location of lands as in reference to Tullahoma, to railroad facilities, etc. While public roads are shown, same can and will be closed.

A second map, showing more of the surrounding lands, location of Cherry Springs, creeks, and Elk River.

The third map, a recently issued Government soil map of Coffee County.

A copy of The Highlands booklet, containing a number of water views, Ovoca, the Knights of Pythias enterprise, analysis of the Hurricane Springs sulphur water, and a prospectus of The Highlands resort.

Also record showing normal monthly, seasonal, and annual temperature and precipitation at Tullahoma.

Respectfully submitted,

TULLAHOMA BOARD OF TRADE,  
T. D. LAWSON, *President.*  
JNO. W. HUSTON, *Secretary.*

## TULLAHOMA'S PRESENTATION OF ITS ADVANTAGES AND INVITATION FOR THE LOCATION OF THE GOVERNMENT MANEUVER GROUNDS.

## TULLAHOMA.

In Tullahoma public spirit and civic pride go hand in hand, the one the fruition of a self-made town, the other an appreciative response to environment; for Tullahoma, an Indian name, "The land of golden flowers," must have applied to the whole of the terrace or plateau (20 miles wide and 100 miles in length) of the Cumberland Mountains, which extends from McMinnville, on the east, to the ridge near Fayetteville on the west, and so christened when ablaze with the golden colorings of an Indian summer.

The site and plan of this beautiful town show the founders to have been men wise in their generation, occupying, as it does, the vantage point of this terrace, which is the highest altitude by 97 feet of any station on the main line of the Nashville & Chattanooga Railroad. The land is slightly rolling for 2 miles northward, when it drops off rapidly several hundred feet through hills and valleys to the limestone basin of Duck River; for 7 miles southward rolling and undulating to the banks of the Elk, and the town itself being 57 feet above the bed of a crystal stream, which flows through its western boundary, forming an unexcelled natural drainage. With broad streets lined with beautiful maples, blue ash, and willow oaks, and lovely homes that denote much individuality, it is now a place of great attractiveness, and the country about Tullahoma is found even more attractive and beautiful. The plateau is noted for its pure freestone water, delightful mountain breeze, and the equable climate and exhilarating atmosphere of a high altitude. Tullahoma is the center of a circle of 10 miles radius that contains a greater variety of medicinal waters than any other locality now known, red, white, yellow, and black sulphur, chaly-beate, alum, soda, and mixed waters.

While presenting these natural surroundings for the location of Government maneuver grounds, yet the people themselves, by desiring to assist substantially, show to the Government a loyal community, wide awake and in touch with the wonderful development now going forward in the South, thus assuring hearty cooperation with progressiveness of spirit.

#### ACCESSIBILITY.

Tullahoma is on one of the great highways of the South, the main line of the Nashville, Chattanooga & St. Louis Railway. Tullahoma is also the terminus for the McMinnville division, an 80-mile branch, which extends now within 8 miles of the Tennessee Central, and within 20 miles of the Cincinnati Southern. The above system, the Nashville, Chattanooga & St. Louis Railway, is unexcelled in the South; is now being doubled tracked between Nashville and Chattanooga, which will be completed in less than five years, and at the present has the splendid service of 21 daily passenger trains.

#### NEAR CENTER OF THE STATE.

Tullahoma is to all practical purposes nearly the central portion of Tennessee, being only 30 minutes from the exact geographical center as traversed by the above splendid railroad system.

#### HEALTHFULNESS.

Tullahoma is the healthiest and the most beautiful town in Tennessee, barring none. Without the one it could not be the other, and a review of her school children attests to the wholesomeness and health-giving surroundings.

#### HIGH ALTITUDE.

Col. J. B. Killebrew said: "Tullahoma has an elevation of 1,070 feet above tide water, and is the watershed between Elk and Duck Rivers. It is a most desirable location, not more by reasons of its healthfulness and climate than because of the excellent yellow sulphur water contiguous to it."

#### WATER SUPPLY.

Tullahoma's water supply is obtained from two wells 200 feet deep, bored and cased; is of the purest freestone, cold, clear as a crystal, and is used by the photographers and druggists for all purposes direct from the hydrant, without filtration.

#### NO BACILLUS COLI.

Dr. Lucius P. Brown, after making chemical analysis and bacteriological examination of 19 samples in August, 1908 (and the date of these tests should not be overlooked, for the month of August is most likely to develop and show impurities, if any), issued certificate pronouncing it to be a most excellent water and free from bacillus coli. Cold and hot tests showed color, white; taste, normal; odor, none.

(Copy of above analysis; also test made by representative of the Boiler Compound Co. will be found attached at back of this folder.)

## FREEDOM FROM EPIDEMICS.

Tullahoma is 500 feet above the yellow-fever level, no epidemic of any sort ever known, and most often free from malignant and contagious diseases.

Dr. Atchison, of Nashville, said, in speaking of Tullahoma: "It is the best altitude and health resort for the people of the lower country that I know of, because of its splendid water, delightful summer breeze, and happy medium of altitude."

## NO TYPHOID FEVER.

Dr. James B. Cowan, one of the noted surgeons and physicians of the South, who served with distinction on the staff of Gen. Forrest, and whose recent death was a great loss to Tullahoma and the State, had been a resident of Tullahoma for more than 40 years, having selected this place for his home on account of what he chose to term "pure water and the glorious atmosphere," and stated repeatedly that there was never a local case of typhoid fever in Tullahoma.

## GEN. BRAGG'S WINTER QUARTERS.

This section was Gen. Bragg's winter quarters in 1863 and was called "Bragg's Clearing." Gen. Starnes, the Confederate cavalry leader, was mortally wounded on the firing lines, dying a few hours after being brought into the camp hospital.

The town of Tullahoma is even now partly encircled by earth breastworks.

## SOIL AND TOPOGRAPHY.

The soil is free from rock, overlying sandstone is porous, and absorbs and dries rapidly. The surface of the ground is rolling and so lends excellent natural drainage.

The 5,000 acres embraced in the tender to the Government drains southeast to Elk River, northwest to Duck River, southwest to Rock Creek, and northeast to Comptons Creek.

## A MERITORIOUS STATEMENT.

M. R. Campbell, one of Tullahoma's most prominent manufacturers and well-known citizens, who has resided in Tullahoma almost since its foundation, in speaking of the many splendid advantages afforded by this section for large encampments and maneuvering grounds, among other things said: "Nature seems to have fitted this locality for some such purpose; the nights are the loveliest to be found on the continent; the evening coolness and the night breezes are proverbial of this altitude; I can recall only three nights in 44 years too hot to sleep under a sheet or blanket, and these nights were in the same summer; and during this period we have never experienced a severe storm, nor have I ever known a house to be disturbed from its foundation. For these blessings we are indebted to a kind and beneficent Providence, and to me it would seem ideal for the purpose tendered. This locality is also comparatively free from mosquitoes and the infinitesimal and detestable gnat. These advantages are not ours to bestow—they belong to this altitude and locality; we can not estimate nor value them by dollars and cents, but they do become a most valuable asset of the Government when maneuvering grounds are established within its borders."

## CHEAPNESS OF LIVING.

Wholesome country surroundings and splendid trucking soil makes the cost of living at the minimum. The State map recently issued by the railroad commission shows that Coffee County excels as a grower of truck crops, strawberries, cabbage, cantaloupes, potatoes, asparagus, snap beans, peas, beets, spinach, salad, onions, lettuce, cucumbers, and sweet corn. The output of country produce, barter, and especially chickens and eggs, reaches enormous proportions, and on account of the splendid free range near by butter, cream, and milk can be had ready at hand fresh and pure. Fuel is abundant and easily had, stove and heater wood from country wagons and the factories at any season of the year, and coal and coke from the coal fields near by—Sewanee, Bon Air, Ravenscroft, and Clifty—Tullahoma being the outlet of these mines. The farming lands are practically undeveloped and present study for the higher agriculturist, and at the same time can be had at a price less than real value.

## LANDS OFFERED.

The citizens of this section offer for your consideration 5,000 acres of land in one solid body, approaching within a mile of the town of Tullahoma, having 2 miles of frontage on the main line of the Nashville, Chattanooga & St. Louis Railroad; over

4 miles paralleling the branch line of said railroad; also an additional frontage of nearly a mile on the Y connecting above main line and branch.

This body of land is admirably adapted, in our opinion, for the purpose tendered, wooded with only an occasional open field, almost as nature made it, rolling sufficient for splendid drainage, the watershed between two rivers and between two creeks, and the Cumberland Mountains 18 miles distant.

Splendid streams of freestone water underlie this entire section of plateau; water can be had at almost any point throughout the entire body of land, either dug wells or bored. Three magnificent springs are within ready pumping distance, southeast, southwest, and northeast. These lands are valuable, yet are tendered to the Government absolutely free of charge, and will be duly transferred and conveyed upon acceptance.

Additional lands to the extent of several thousand acres can be had at reasonable cost, should there at any time be occasion requiring additional lands, and the citizens of this section pledge themselves to stand ready to assist the Government in obtaining same at fair valuation.

Respectfully submitted.

TULLAHOMA BOARD OF TRADE,  
T. D. LAWSON, President.  
JNO. W. HORTON, Secretary.

#### ANALYSIS OF CITY WATER AT TULLAHOMA.

Dr. Lucius B. Brown, of Nashville, Tenn., after making chemical analysis and bacteriological examinations in August, 1908, made the following report:

##### BACTERIOLOGICAL EXAMINATION.

Number of bacteria to each cubic centimeter, 280 (an extraordinary freedom from same, as an investigation of reports on waters of other cities will show from 5 to 10 times greater).

Nineteen samples, taken from common hydrant, were tested for bacillus coli, of which none showed its presence.

The bacteriological examination, in the absence of other evidence, would indicate that the water is drinkable water.

The above sample of water shipped to Dr. Brown August 4, 1908, and certificate made August 13, 1908.

##### Chemical analysis.

	Parts per million.
Chlorin.....	10.78
Albuminoid.....	.0002
Free ammonia.....	.0002
Nitrogen existing as nitrates.....	.0002
As nitrites.....	None.
Required oxygen.....	.2375
Total solids.....	67.000
Of which there is lost on ignition.....	33.000

Color, white; turbidity, none; taste, normal; odor, hot and cold tests, none.

The chemical analysis taken in connection with the bacteriological examination indicates this to be a most excellent water.

The above sample of water shipped August 15, 1908, and certificate made August 15, 1908.

The following is result obtained by Mr. Bird Archer, a representative of the Boiler Compound Co.:

	Grains per U. S. gallon.
Total solids.....	6.996
Organic and volcanic matter.....	3.307
Sodium chloride.....	1.156
Calcium carbonate.....	1.674
Calcium sulphate.....	.170
Magnesium carbonate.....	.689
Free carbonic acid.....	7.090

## CLIMATE.

The high altitude of the Highland Rim and its proximity to the mountains have quite a modifying influence upon the climatic conditions in the county. The summers are long and warm enough to permit the successful growing of a great diversity of crops. Even during the hottest weather the nights are delightfully cool. The winters are short and generally mild, except for recurring cold snaps. The thermometer sometimes registers below zero. The climatic data given in the table below, compiled from records of the Weather Bureau station at Tullahoma, are especially applicable to the leveler parts of the county. In the Outer Rim, where the topography is very broken, the ridges have at least a small sheltering influence, the effects of the cold north winds are less severe, and the growing season is virtually prolonged by the warding off of some of the light frosts of spring and fall. As a whole, the climate is mild, pleasant, and very healthful.

*Normal monthly, seasonal, and annual temperature and precipitation at Tullahoma.*

Month.	Temperature.			Precipitation.			
	Mean. °F.	Absolute maximum. °F.	Absolute minimum. °F.	Mean. Inches.	Total amount for the driest year. Inches.	Total amount for the wet- test year. Inches.	Snow, average depth. Inches.
December.....	39	69	-5	5.2	2.5	7.2	3.7
January.....	38	74	-14	5.9	7.0	8.4	3.5
February.....	40	72	-20	4.6	1.2	9.2	3.4
Winter.....	39	.....	.....	15.7	10.7	24.8	10.6
March.....	49	81	0	6.5	3.6	9.8	1.9
April.....	57	87	22	4.9	5.6	4.7	Trace.
May.....	67	92	32	2.9	1.6	3.2	0.0
Spring.....	58	.....	.....	14.3	10.8	17.7	1.9
June.....	73	97	40	4.1	2.6	4.6	0.0
July.....	76	100	41	4.9	7.6	10.6	0.0
August.....	75	98	48	3.8	2.4	2.3	0.0
Summer.....	75	.....	.....	12.8	12.6	17.5	0.0
September.....	68	97	27	2.9	3.3	2.2	0.0
October.....	58	91	22	2.5	3.9	2.4	0.0
November.....	47	77	13	3.8	2.6	2.0	0.2
Fall.....	58	.....	.....	9.2	9.8	6.6	0.2
Year.....	57	100	-20	52.0	43.9	66.6	12.7

The mean annual temperature as shown by the table above is 57° F., the absolute maximum 100° F., and the absolute minimum -20° F. July is the hottest and January the coldest month in the year. The annual precipitation averages about 52 inches, but varies from 43.9 to 66.6 inches. In the driest years the precipitation is sufficient to produce maximum crops were it evenly distributed, but droughts occur occasionally and do much damage, and the same is likewise true when there is too much rainfall. The snowfall averages about 12.7 inches a year.

The average date of the last killing frost in the spring is April 18 and of the first in the fall October 16. The growing season is about six months long, or fully a month shorter than through the main cotton belt. The shorter season, coupled with the cool nights prevailing through the summer months, puts the county practically out of the cotton-producing section. Erratic frosts in the spring make some of the fruit crops uncertain, especially peaches and pears, which bloom early.

## APPENDIX J.—TULLAHOMA.

## SANITARY CONDITIONS AT TULLAHOMA, TENN.

No vital statistics are available for this district, although it has an enviable reputation as a health resort. The appearance of the children and adults would lead one to believe that this reputation was well founded.

The population of Coffee County, in which almost the entire area examined lies, is, exclusive of the towns of Manchester and Tullahoma, 11,613; its area, 283,000 acres, giving a population per acre of 0.041. This population is chiefly confined to the more fertile districts, and it is not believed that over 100 persons reside on the tract examined.

It is said that there is absolutely no typhoid fever native to this section. Mosquitoes are practically absent, and the few pools which might serve for their breeding can be very easily cared for. Ground itch and uncinariasis are not found in this locality.

The death rate, taken from the report of the State board of health, was 12.09 per thousand for the year 1910.

The whole area examined is covered by a cherty soil, clay showing in places where the land is more fertile. This chert is quite deep and absorbs the rain water rapidly, thus affording a splendid soil on which to establish camps. The surface drainage is fairly good, the land draining into the Little Duck and Elk Rivers. Suitable camp sites are abundant when surface conditions alone are considered.

The water supply of this area is mainly from shallow wells ranging from 20 to 40 feet in depth, which draw their supply from the surface water lying in the Walden sandstone which overlies the whole territory. In the town of Tullahoma two deep wells have been bored to a depth of 200 feet, piercing the sandstone and Bangor limestone strata and drawing their supply from the deep layer of the surface water lying on the Chattanooga shale, which forms a water-bearing stratum throughout this whole section. Included in the area proposed for a target range there is a series of large springs, known collectively as Cherry Springs, which yield something over 1,375 gallons of water per minute. Near Manchester another set of springs form the headwaters of the Little Duck River. There is ample supply here for a large camp, and its waters are probably good, although no analyses are obtainable. The town of Manchester is also supplied from this source.

The source of this water is not known, although from its location it is believed to come from an outcropping of the Chattanooga shale. The course of the Elk and Little Duck Rivers is shown on the appended maps.

The surface wells mentioned are liable to contamination from seepage, and the supply is too varying to form a satisfactory source for use in large camps. The deeper waters can be obtained with small expense and practical certainty at any point over the whole territory, as the water-bearing stratum is particularly level, and lies at a depth varying from 40 to 200 feet. These waters, as shown by chemical and bacteriological examination of the water at Tullahoma, are of very exceptional purity, and an ample supply can readily be obtained. No analysis of the Cherry and Little Duck Springs water was obtainable, but there is little doubt that it is of good character. The waters of both the Elk and Little Duck are grossly polluted, and could only be used for bathing and for watering cattle. Both of these streams could, however, be used for the discharge of the effluent of septic tanks.

FRANK BAKER,  
Major, Medical Corps.

JUNE 2, 1911.

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